

# Accuracy Characteristics for ZMP Risk Reduction Nominal Scenario, Hours 1655-2210

## 1 Introduction

This document contains scenario characteristics for hours 1655 to 2210 (actual recorded data 16:58:55 to 22:05:51) GMT recorded on October 16, 2002 at Minneapolis ARTCC (ZMP). Characteristics provided are general statistics determined from the scenario on general air traffic activity and aircraft and air carrier characteristics. Definitions for these scenario characteristics are provided in Reference [1].

## 2 Air Traffic Distributions

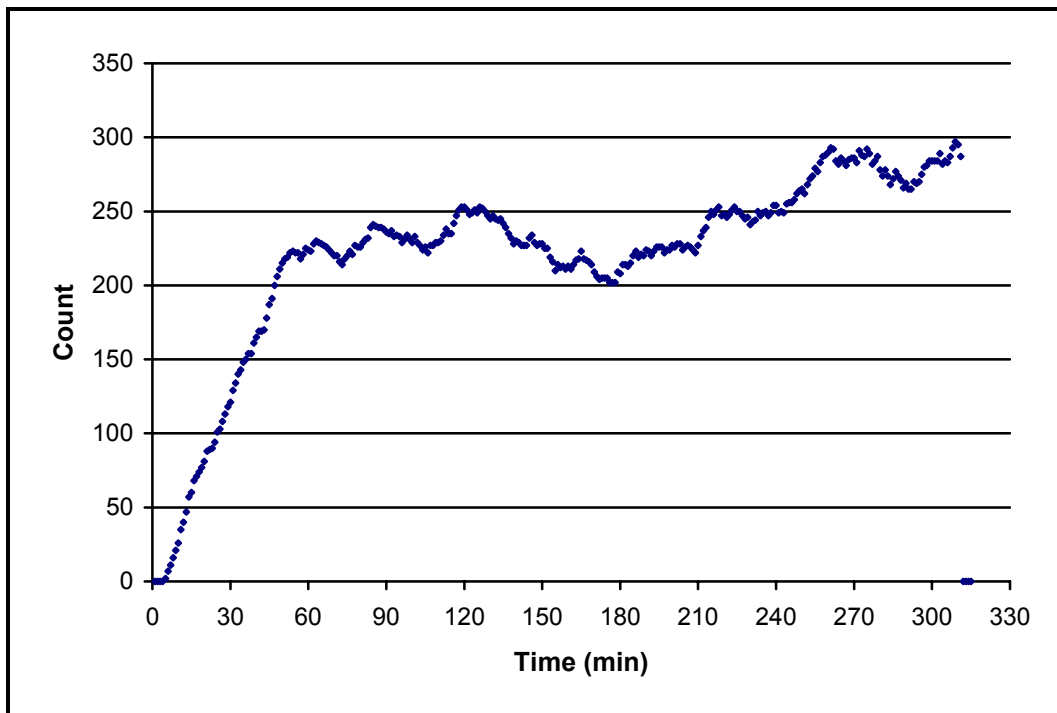
This section provides metrics that characterize the air traffic. The metrics are flight density partitioned by standard flight levels, flight type and sector penetration, statistics on the number of active flights, ground speed statistics, counts of interim altitude and amendment messages, and air traffic maneuvers by altitude and phase of flight. This section corresponds to Section 3.3 of Reference [1].

### 2.1 Active Flights

This section corresponds to section 3.3.2 of Reference [1].

**Table 1: Statistics on Active Flights per Minute Increment**

Count Average	Standard Deviation	Maximum Count	Minimum Count
217.400	66.666	297	0



**Figure 1: Count of Active Flights per Minute Increment**

## 2.2 Flight Type and Sector Penetration

This section corresponds to Section 3.3.3 of Reference [1].

**Table 2: Statistics on Sector Time, Center Time and Sector Penetration by Flight Type**

Metric	Arrivals	Departures	Internals	Overflights	All Flights
Average Number of Sectors Penetrated	2.229	2.163	2.100	2.305	2.219
Average Time in Center (sec)	1739.650	1386.674	1727.346	2073.345	1762.711
Average Time in Sector (sec)	770.597	631.276	806.099	892.797	784.896
Percentage by Flight Type	24.898	25.713	15.125	33.566	100.000

## 2.3 Interim Altitude Messages

This section corresponds to Section 3.3.6 of Reference [1].

**Table 3: Statistics on Interim Altitude Messages <sup>1</sup>**

Flight Count	Average	Standard Deviation	Maximum Count	Minimum Count
1251	2.568	0.821	6	1

## 2.4 Amendment Messages

This section corresponds to Section 3.3.7 of Reference [1]

**Table 4: Statistics on Amendment Messages per Flight<sup>2</sup>**

Flight Count	Average	Standard Deviation	Maximum Count	Minimum Count
716	2.029	1.230	13	1

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<sup>1</sup> Statistics on flights with interim altitude messages only

<sup>2</sup> Statistics on flights with flight plan amendments only

## 2.5 Air Traffic Maneuvers

This section corresponds to Section 3.3.8 of Reference [1]. Detailed statistics on air traffic maneuvers are provided in Appendix C.

**Table 5: Total Track Report Maneuver Count by Vertical and Horizontal Phase of Flight**

Vertical Phase	Horizontal Phase of Flight		Total
	STR	TURN	
ASC	10833	2257	13090
DES	11641	2311	13952
LEV	3841	2335	6176
Total	26315	6903	33218

**Table 6: Percent breakdown of Flight Tracks by Vertical and Horizontal Phase**

Vertical Phase	Horizontal Phase of Flight		Margin (%)
	STR (%)	TURN (%)	
ASC	32.612	6.795	39.406
DES	35.044	6.957	42.001
LEV	11.563	7.029	18.592
Margin (%)	79.219	20.781	100.000

## 3 Aircraft Distributions

This section provides the metrics used to characterize the aircraft provided in the scenario. The selected metrics are aircraft type, model, navigational equipment, and the air carriers operating in the airspace. The section corresponds to Section 3.4 of Reference [1].

### 3.1 Aircraft Type

This section corresponds to Section 3.4.1 of Reference [1].

**Table 7: Count by Aircraft Type**

Aircraft Type	Count	Percentage of Total
J	1039	59.988
P	226	13.048
T	270	15.589
Unknown	197	11.374
Total	1732	100.000

### 3.2 Aircraft Models

This section corresponds to Section 3.4.2 of Reference[1].

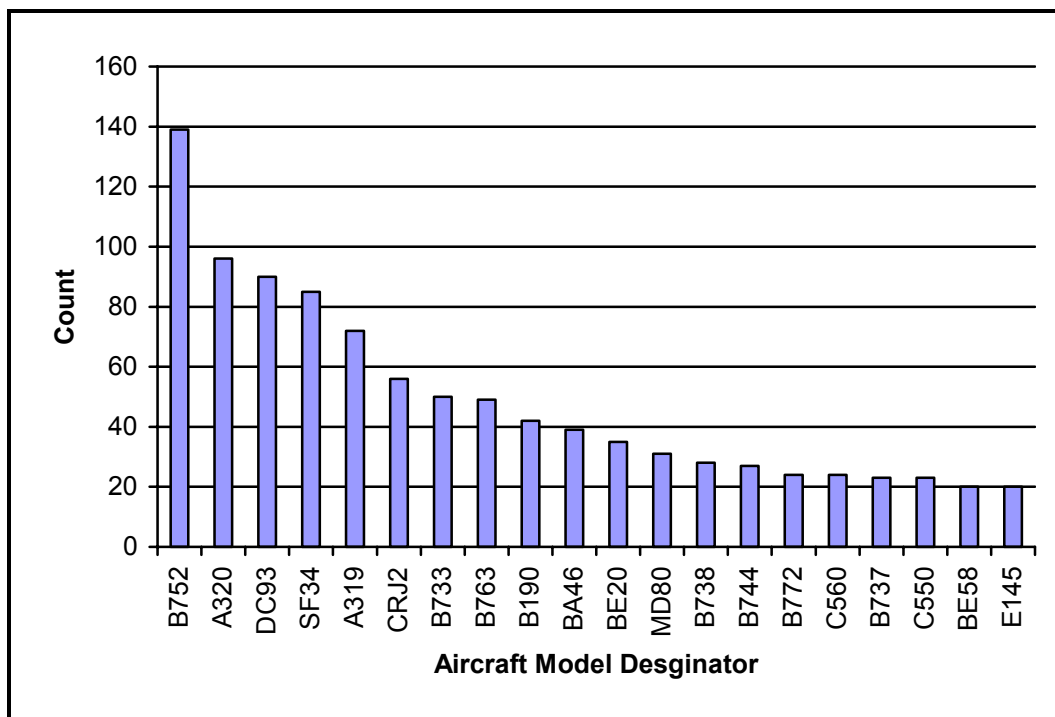


Figure 2: Count of Top Twenty Aircraft Models

### 3.3 Navigational Equipage

This section corresponds to Section 3.4.3 of Reference [1].

Table 8: Count by Aircraft Navigational Equipage Type

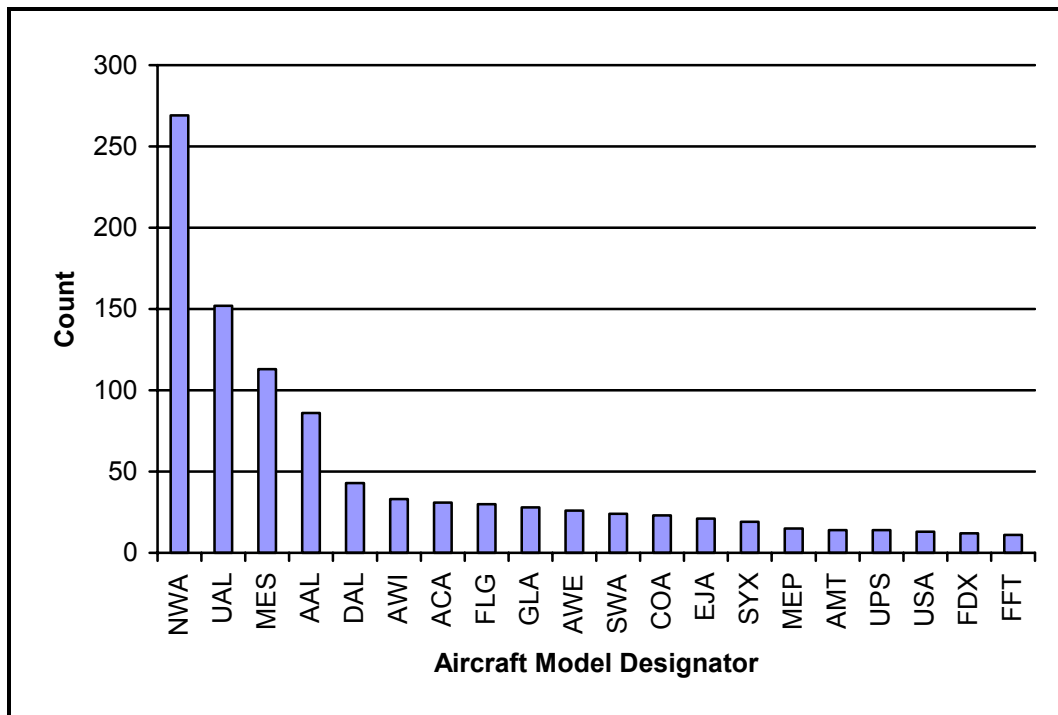
Nav. Equip. Designator	Count	Percentage of total
G	421	24.307
E	399	23.037
A	332	19.169
I	191	11.028
F	163	9.411
R	94	5.427
W	80	4.619
Q	30	1.732
Unknown	21	1.212
B	1	0.058
Total	1732	100.000

### 3.4 Carrier Distribution

This section corresponds to Section 3.4.4 of Reference [1].

**Table 9: Count by Carrier Type**

Category	Count	Percentage of Total
Commercial	1138	65.704
General Aviation	508	29.330
Other <sup>3</sup>	86	4.965
Total	1732	100.000



**Figure 3: Count by Top Twenty Air Carriers**

## 4 Reference

[1] Paglione, M., Oaks, R., Ryan, Dr. H., Summerill, J.S., (Final, January 2000), "Description of Accuracy Scenarios for the Acceptance Testing of the User Request Evaluation Tool (URET) / Core Capability Limited Deployment (CCLD)," FAA William J. Hughes Technical Center / ACT-250, Atlantic City, New Jersey.

<sup>3</sup> Includes military and aircraft with unrecognized designators.